Neuromorphic Compute Chips

ANMD-MRS7-069 · Advanced Semiconductor Applications

A Global Sustainability Due Diligence & Market Research Study

History 2020–2024 · Base Year 2025 · Forecast 2025–2032 · Outlooks 2035 / 2040 / 2050 · Currency US$

WHY THIS REPORT

Neuromorphic compute chips rethink computing on the brain's terms — the spiking, in-memory and event-driven architectures that promise orders-of-magnitude better energy efficiency for sensing and inference at the edge. This decision-grade study sizes the global market three ways — value, unit volume and TOPS/Watt efficiency — across architecture, application and end user, across seven regions and four scenarios to 2032, with outlooks to 2050.

SUSTAINABILITY & SDG IMPACT — THE ANMD LENS

Sustainability is this report's backbone, not an afterthought. Neuromorphic's core contribution is energy-per-inference reduction for edge and always-on workloads, potentially displacing far less efficient conventional inference and lowering the energy footprint of pervasive AI.

Mapped Sustainable Development Goals:

SDG 7	SDG 9	SDG 13
Affordable Clean Energy	Industry & Innovation	Climate Action

Measurable sustainability outcomes assessed:

- Energy-per-inference reduction for edge and always-on AI
- Ultra-low-power sensing and inference
- Displacement of less-efficient conventional accelerators
- Fab energy intensity, early-stage TRL uncertainty and electronics end-of-life as material risks

Framework alignment: Double materiality mapped to GRI, SASB, ISSB, TCFD, TNFD, CSRD and the EU Taxonomy, with greenwashing and SDG-washing screens applied throughout.

WHAT'S INSIDE AT A GLANCE

53 Chapters	**9** Report Parts	**7** Regions Covered	**40+** Country Markets
2025–32 Forecast Horizon	**4** Forward Scenarios	**25+** Companies Profiled	**3** SDGs Mapped

REPORT COVERAGE

Geographic scope: North America, Europe, Asia Pacific, Latin America, Africa, Middle East and Rest of World — with named country intelligence. North America is the research leader (United States) on platform programmes and edge-AI silicon; Europe is the innovation hub (Germany, Netherlands, United Kingdom) on R&D and startups; Asia Pacific is the scale engine; other regions assessed on their own merits.

MARKET OVERVIEW

From research to early commercial — where compute goes spiking, in-memory and event-driven.

Neuromorphic compute is an emerging, research-to-early-commercial field. Demand is driven by ultra-low-power edge AI, always-on sensing, and the search for alternatives to von-Neumann inference — with digital, analog and in-memory approaches competing. The market is read three ways — value, unit volume and TOPS/Watt efficiency — and forecast under four scenarios, each region reported separately.

- **North America is the research leader** — United States, on platform programmes and edge-AI silicon
- **Europe is the innovation hub** — Germany, Netherlands and United Kingdom, on neuromorphic R&D and startups
- **Asia Pacific is the scale engine** — China, South Korea and Japan, on foundry and device integration
- **Efficiency is the differentiator** — spiking and in-memory architectures plus TOPS/Watt advantage

REGIONAL OUTLOOK

Across seven reporting regions, the report separates early commercialisation leaders from high-growth and emerging markets — each profiled in full rather than aggregated into Rest of World.

Region	Stage	Lead Markets & Drivers
North America	Research leader	United States — platform programmes, edge-AI silicon
Europe	Innovation hub	Germany, Netherlands, United Kingdom — R&D, startups
Asia Pacific	Scale engine	China, South Korea, Japan — foundry, device integration
Middle East	High-growth	Israel, UAE — chip design, deep-tech investment
Latin America	Emerging	Brazil, Mexico — electronics assembly, adoption
Africa	Emerging	South Africa, Egypt — electronics, industrial adoption

KEY MARKET DRIVERS & RESTRAINTS

Drivers	Restraints
• Edge-AI + always-on-sensing power convergence	• Early-stage TRL & commercialisation uncertainty
• Energy-per-inference & battery-life value	• Software, toolchain & ecosystem immaturity
• Policy & funding support (chips acts, AI research)	• Fab access, cost & integration complexity
• Software-and-platform maturity momentum	• Benchmarking & comparability challenges
• Spiking, analog & in-memory architecture gains	• Talent, standards & design-flow gaps

SEGMENTATION SNAPSHOT

By Architecture	Digital spiking · analog · in-memory compute
By Application	Edge AI · always-on sensing · wearables · robotics · IoT
By Compute Model	Spiking neural networks · event-driven · in-memory matrix
By End User	Device OEMs · research labs · defence · industrial
By Maturity	Research · prototype · early commercial
By Business Model	Chip sale · IP licensing · foundry · co-design

TABLE OF CONTENTS — PARTS & CHAPTERS

The full report is organised into nine parts across 53 chapters, listed below. Detailed sub-headings, country tables and directories are provided in the full report.

COMPETITIVE & INVESTMENT SNAPSHOT

The competitive field spans global semiconductor majors, specialist neuromorphic compute chips makers, and emerging innovators. Deal activity — M&A, technology acquisition and platform expansion — signals a market consolidating around scalable, platform and software maturity.

Representative players profiled in the full report:

Intel Corporation (Loihi) · International Business Machines Corporation (TrueNorth / NorthPole) · Qualcomm Incorporated · Innatera Nanosystems B.V. · Samsung Electronics Co., Ltd. · Mythic, Inc. · Rain AI · and 20+ further profiled players across platform leaders, in-memory startups and emerging innovators.

Investment intelligence: venture, infrastructure, development, climate and blended finance, green bonds and sustainability-linked loans — culminating in a bankability assessment and a Go / No-Go / Conditional-Go investment verdict.

KEY QUESTIONS THIS REPORT ANSWERS

? How large is the global neuromorphic compute chips market, and how fast will it grow to 2032?
? Which regions, countries and segments offer the strongest risk-adjusted opportunity?
? How does energy-per-inference (or sensing efficiency) change value versus conventional silicon?
? Who leads, and where is the competitive and patent white space?
? Is the investment case bankable — and under what conditions?
? How does the category align with the SDGs, digital-equity and energy-efficiency and disclosure regulation?

WHY ANMD — THE DIFFERENCE

Most market studies stop at units and revenue. This report is built as a sustainability due diligence instrument — fusing market sizing with ESG, SDG, climate, water and natural-capital intelligence and a decision-ready bankability verdict in a single architecture.

- **Triangulated sizing** — every market read three ways so value, volume and efficiency views reconcile rather than conflict.
- **Region-honest forecasting** — Latin America, Africa and the Middle East reported in full, never hidden inside Rest of World, every forecast resolved to the 2025 base year.
- **Integrated evidence base** — company, patent and project databases linked to the analysis, with published-filing patents and FTO treated as an indicator, not a legal conclusion.
- **No-fabrication discipline** — every estimate carries a data-confidence rating and disclosed sources; gaps are flagged for further diligence, never filled with invented numbers.
- **Anti-greenwashing rigour** — SDG-washing and greenwashing screens plus claim-substantiation checks built into the ESG and project analysis.
- **Decision-first structure** — 9 Parts and 53 Chapters culminating in stakeholder playbooks and a clear Go / No-Go / Conditional-Go investment verdict.

WHO SHOULD BUY THIS REPORT

Investors and deep-tech / PE funds, semiconductor and device OEMs, foundries and IP licensors, system integrators and industrial users, research labs and defence buyers, regulators and lenders, and corporate strategy and ESG teams.

Access the Full Report

The complete report delivers all 53 chapters in full, with every sub-heading, country table, company and patent directory, forecast model and due diligence checklist.

Purchase at **www.anewmarketdynamics.com** · Standard & Premium licences · Single-Site (SSL) and Global-Site (GSL) options at checkout.

Want the Complete Detailed Table of Contents?

This prospectus lists the nine parts and 53 chapters. The complete detailed table of contents — every sub-heading, country table, exhibit, company and patent directory and annex — is available on request to registered users. To receive it, register with your official company email at **www.anewmarketdynamics.com**. The full detailed table of contents will be sent directly to your registered company email address.